

## Claims

1. Sensor for measuring a gas concentration or ion concentration having:
  - a substrate (11) of a first charge-carrier type;
  - a drain (3) of a second charge-carrier type fashioned on the substrate;
  - a source (2) of the second charge-carrier type fashioned on the substrate;
  - a channel region (4) of the substrate, which is arranged between drain (3) and source (2);
  - a conductive guard ring (1), which is arranged outside the channel region;
  - a sensitive gate layer (8) whose potential depends on an ambient gas concentration or ion concentration, there being an air gap (1) between the gate layer (8) and the channel region (4), **characterized in that** between the guard ring (1) and the channel region (4) there is fashioned an oxide layer (13) on whose surface there is arranged a ring structure (20) having a surface conductivity different from that of the rest of the surface of the oxide layer (13).
2. Sensor according to Claim 1, characterized in that additionally surface profiling is provided, with elevations (7) and depressions (12), between guard ring (1) and channel region (4).
3. Sensor according to Claim 2, characterized in that the ring structure (20) is applied by deposition on a surface (15) between an insulating thin layer (13) on the channel region and the guard ring (1).
4. Sensor according to Claim 2 or 3, characterized in that the ring structure (20) are<sup>2</sup> applied as insulating material on one or a plurality of insulator layers, preferably thick oxide layers (14).
5. Sensor according to one of Claims 2 to 4, characterized in that the ring structure (20) is fashioned at least substantially concentrically between channel region (4) and guard ring (1).
6. Sensor according to one of the foregoing claims, characterized in that the ring structure

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<sup>2</sup> The subject-verb disagreement follows the usage of the original text—Translator.

(20) is made of aluminum or an aluminum-copper alloy.

7. Sensor according to one of the foregoing claims, characterized in that the sensitive gate layer is a gas-sensitive gate layer (8).

8. Sensor according to one of the foregoing claims, characterized in that the field-effect transistor formed from source (2) and drain (3) is spatially separated from the air gap (10) between the gate layer (8) and the channel region (4), the gate (12) of the field-effect transistor being led via an electrode (19) into the channel region (4).

9. Sensor according to Claim 2, characterized in that the elevations (7) simultaneously form the ring structure (20).